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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BYUNG KEUN LIM

Appeal 2008-3240
Application 09/189,793
Technology Center 2600

Decided: September 15, 2008

Before JOSEPH F. RUGGIERO, JOHN A. JEFFERY,
and KARL D. EASTHOM, *Administrative Patent Judges*.

EASTHOM, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134 from a final rejection of claims 30-32, 34-36, 38-40 and 43-47. No other claims are pending. (App. Br. 2). We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF THE CASE

Appellant's invention relates to a bi-directional Code Division Duplexing (CDD) wireless communication system. N unique codes are assigned to one channel. Within the N codes, some are designated to indicate a forward direction and some are designated to indicate a reverse direction communications channel. (Spec. 1, 4, 5).

Claim 30 is representative of the claims on appeal, and it reads as follows:

30. A system comprising:

a plurality of reverse communication channels; and

a plurality of forward communication channels, wherein:
each of the plurality of reverse communication channels and each of the plurality of forward communication channels utilize one common frequency;

each of the plurality of reverse communication channels having a unique code to identify the channel as a reverse communication channel and each of the plurality of forward communication channels having a unique code to identify the channel as a forward communication channel; and

the plurality of reverse communication channels and plurality of forward channels carry data simultaneously.

The prior art relied upon by the Examiner in rejecting the claims on appeal is:

Omura	US 5,235,615	Aug. 10, 1993
Nakajima	US 5,487,083	Jan. 23, 1996

Claims 30-32, 34-36, 38-40, and 43-47 stand rejected under 35 U.S.C. § 103(a) based upon the collective teachings of Omura and Nakajima.

Rather than repeat the arguments of Appellant or the Examiner, we refer to the Brief (filed Mar. 21, 2007), the Reply Brief (filed February 20, 2007), the Supplemental Reply Brief (filed September 19, 2007) and the Answer (mailed July 19, 2007) for their respective details. In this decision, we have considered only those arguments actually made by Appellant. Arguments which Appellant could have made but did not make in the Briefs have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c) (1) (vii).

ISSUE

Appellant disputes the Examiner's determination that the collective teachings of Omura and Nakajima render obvious the limitation of "each of the plurality of reverse communication channels having a unique code to identify the channel as a reverse communication channel and each of the plurality of forward communication channels having a unique code to identify the channel as a forward communication channel" as recited in claim 30. (App. Br. 7-11). Appellant presents similar arguments for independent claims 34, 38, and 43, and for dependent claims 31, 32, 35, 36, 39, 40, 45-47. Appellant also recites certain limitations recited in each of the claims, but generally fails to make separate arguments for patentability as regards claims 31, 32, 35, 36, 39, 40, 45-47. (App. Br. 11, 12, 15, 16-20, 22). While we separately address these certain limitations where appropriate, the central issue before us is whether the collective teachings of

Omura and Nakajima render obvious the unique code as set forth in representative claim 30.

PRINCIPLES OF LAW

Appellant has the burden on appeal to the Board to demonstrate error in the Examiner's position. *See In re Kahn*, 441 F.3d 977, 985-86 (Fed. Cir. 2006) ("On appeal to the Board, an applicant can overcome a rejection [under § 103] by showing insufficient evidence of *prima facie* obviousness or by rebutting the *prima facie* case with evidence of secondary indicia of nonobviousness.") (quoting *In re Rouffet*, 149 F.3d 1350, 1355 (Fed. Cir. 1998)). During examination, the Examiner bears the initial burden of presenting a *prima facie* case. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

The Examiner's articulated reasoning in the rejection must possess a rational underpinning to support the legal conclusion of obviousness. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Regarding the obviousness analysis:

"If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill."

KSR Int'l Co. v. Teleflex, Inc., 127 S.Ct. 1727, 1740 (U.S. 2007).

FINDINGS OF FACT (FF)

Omura

1. Omura discloses a spread spectrum, wireless telephone communications system. The system employs code division multiple access (CDMA) orthogonal codes which all use the same carrier frequency for base-communication signals and for remote-communication signals (i.e. for base to wireless (telephone, radio) device communication and vice versa). (Col. 1, ll. 32-59; col. 4, ll. 3-6; col. 6, ll. 16-47; col. 9, ll. 2-12; Fig. 1). The orthogonal base codes are transmitted simultaneously to one another, as are the orthogonal remote codes. The orthogonal codes, unique to each other for each communications channel in a microcell, minimize interference and provide higher capacity as compared to prior art systems. (Col. 6, ll. 16-47; col. 14, ll. 48-53).

2. “For a particular two-way communications channel between a particular remote unit and the base station 110, the unique chip codeword used for the base communications signal and the remote-communications signal may be identical.” (Omura, col. 6, ll. 47-51).

3. “The echo signal may use the same chip codeword as was used by the access signal, *or a different chip codeword.*” (Omura, col. 5, ll. 50-54) (emphasis supplied).

4. Each channel carries up to 16 different non-interfering wireless communication links on a single carrier frequency based on the orthogonal code sets, for a total of 160 links on 10 FDMA channel single carrier frequencies. The links include mobile telephones and a central base station.

(Omura, col. 3, ll. 48-54; col. 8, ll. 30-44; col. 7, ll. 58-68; col. 8, l. 65 to col. 9, l. 14; Fig. 1).

5. Omura uses a full duplex time division duplexing (TDD) system for communications in both directions (from base to remote, and remote to base) on each single carrier frequency. (Col. 3, ll. 54-56).

Nakajima

6. Nakajima discloses a spread spectrum system that scans and switches codes for a plurality of communications channels having one common frequency within a radio zone/cell and also, common to different radio zones/cells. Nakajima discloses that such a system advantageously allows for simple hand off of cell phones in a mobile cellular telephone system between such zones/cells. (Abstract, col. 2, ll. 14-32; col. 7, ll. 13-20; col. 9, ll. 32-67).

7. Further describing code groups for the different communications channels at each common frequency, (*see generally* col. 3, l. 63 to col. 4, l. 37; Fig. 4), Nakajima states: "Each code group, for example, $C1_{1i}$ includes a plurality of spectrum spreading codes $C1_{11}, C1_{12}, \dots, C1_{1m}$ which define a plurality of communication channels and a spectrum spreading code $C1_{1c}$ which defines a control channel." (Col. 4, ll. 3-7).

8. Describing the forward and reverse channels within each of the several communication channels within a common frequency, Nakajima explains: "In practice, each communication channel is assigned two spectrum spreading codes which defined a pair of forward (from the mobile station to the base station) and reverse (from the base station to the mobile station) channels, but no distinction will hereinafter be made between the

spreading codes for the reverse and forward channels in the interests of brevity.” (Nakajima, col. 4, ll. 7-12).

9. Nakajima teaches that employing different spread spectrum codes for the same frequency in adjacent different cells decreases interference (col. 7, l. 66 to col. 8, l. 19).

ANALYSIS

Claim 30

Regarding the disputed limitation of claim 30, Appellant argues that there is no suggestion to modify Omura’s CDMA system to include Nakajima’s unique codes for the reverse and forward channels (App. Br. 9). Appellant bases this assertion in part on the allegation that “Nakajima relates to a TDMA type of system.” (*Id.*, *See also* Reply Br. 3-4).

We disagree with Appellant’s characterization of Nakajima. Nakajima does not employ a TDMA system, but rather, employs a spread-spectrum system (FF 6). Moreover, Nakajima’s spread-spectrum system is similar to Omura’s. (*Compare* FF 1-5 *with* FF 6-9). That is, for example, each system employs a set of unique codes allowing multiple mobile telephones to use the same frequency (*see* FF 1-9). Additionally, each system similarly employs a different set of codes in different microcells to minimize interference (Omura, col. 13, ll. 58-62, col. 14, ll. 48-53; FF 9).

Appellant also argues: “At best, Nakajima merely discloses that each channel is assigned two codes to define a forward and a reverse channel.” (App. Br. 9). According to Appellant’s related argument, Nakajima does not disclose a plurality of forward and reverse channels each having such unique

defining codes that all utilize one common frequency. (*Id*). These arguments fail to persuade us of error for at least two reasons.

First, the former argument fails to appreciate the full import of Nakajima's teachings. As such, the latter argument lacks factual support. That is, we find, as the Examiner did, that Nakajima discloses one common frequency for a plurality of communication channels (FF 6-7) with each channel having a unique forward and reverse code (FF 7-8). (Ans. 8). Therefore, mathematically, there must be a plurality of forward and reverse channels each employing unique codes on a common channel.

Second, the latter argument is directed to Nakajima singularly. As such, it does not address the Examiner's cumulative finding directed to the collective teachings of the combination of references (Ans. 4-8). That is, the Examiner found (Ans. 4-8), and we concur, that Omura also teaches a plurality of channels assigned to one common frequency (FF 1, 4, 5), while, as we just discussed, Nakajima teaches a unique forward and reverse code for each channel within a common frequency (FF 8).

Appellant's related assertions that Nakajima discloses two codes for *each* channel (*see also* App. Br. 10) simply supports the Examiner's finding (Ans. 8), and ours (FF 7, 8), that Nakajima teaches unique forward and reverse codes for each channel *of a plurality* of channels. Appellant's argument that each code is not necessarily unique (*see* Reply Br. 5) simply ignores Omura's teaching that each code is orthogonal (FF 1), and is therefore, by definition, unique to each of the other orthogonal codes. Such unique codes avoid interference (*see* FF 1, 4) as do Nakajima's similarly unique codes (*see* FF 7-9).

Further regarding the combination, the Examiner reasoned that “it would have been obvious to a person of ordinary skill in the art, at the time the invention was made to have the forward and reverse channel of Omura each separated by unique code word as taught by Nakajima in lieu of the same code for both reverse and forward channels so to avoid interference between adjacent radio zones and to increase the capacity.” (Ans. 8). Appellant does not challenge this reason, nor the factual findings involved, in more than a conclusory fashion.

Accordingly, we are not persuaded by Appellant’s arguments. Nakajima merely teaches a well known method of full duplex communication whereby both the forward and reverse devices in the communications link are assigned their own unique spread spectrum code (FF 8). Omura similarly teaches a plurality of communications channels each operating on the same carrier frequency and each employing its own unique spread spectrum code, but Omura teaches a TDD full duplex (i.e., forward and reverse) communication system (FF 1, 4, 5).

Additionally, while Omura further teaches that the forward and reverse *communication* channels may use the same code (FF 2), Omura also teaches that similar forward and reverse *control* channels may use the *same or different* codes (FF 3). Such combined teachings imply that the forward and reverse communication channels may also employ different codes, as the Examiner found (Ans. 11), contrary to Appellant’s assertions otherwise (Supp. Reply Br. 2; Reply Br. 2). Nonetheless, even without Omura’s implied teaching that the forward and reverse codes may be different,

Nakajima also discloses the limitation as the Examiner found and as we discussed *supra* (FF 8, Ans. 11).

Following *KSR*, we find that Nakajima's well-known full duplex spread spectrum code system (FF 8) would have provided a predictable and beneficial substitute for, or addition to, Omura's similar spread spectrum code system (FF 5), by providing reduced interference and/or increased capacity within a simplified hand-off system between cells (FF 1, 4, 6, 9, *compare* Ans. 8, 11). Thus, Appellant's bare allegations that the Examiner has obtained the "how and why" from Appellant's Specification, and related remarks asserting a lack of a suggestion for the proposed modification, are not persuasive (App. Br. 10). Moreover, Appellant does not allege and the record does not persuade us, that such a technique involves anything beyond ordinary skill in the art.

We also alternatively find that Nakajima singularly teaches all the limitations of claim 30. *See In re Meyer*, 599 F.2d 1026, 1031 (CCPA 1979) (noting that obviousness rejections can be based on references that happen to anticipate the claimed subject matter). We find that Nakajima teaches a plurality of forward and reverse channels utilizing one common frequency. (*See* FF 6-8). Each forward and reverse channel has its own unique code. (*Id.*). Therefore, with such unique codes, we find that Nakajima's system carries data simultaneously on each channel when two telephone users talk at the same time - which such a system supports. (*See* FF 6-8).

For the reasons noted above, Appellant has failed to demonstrate error in the Examiner's rejection of independent claim 30. Accordingly, we will sustain the Examiner's rejection of claim 30.

Dependent Claim 31

Appellant merely recites claim limitations including the unique orthogonal codes for the reverse and forward channels of claim 31 and generally asserts that there is no suggestion for such codes or other recited limitations. (App. Br. 11-12). Such statements do not rise to the level of an argument explaining why the Examiner has erred, and fails to meet Appellant's burden on appeal. *See Kahn*, 441 F.3d at 985-86; 37 C.F.R. § 41.37(c)(1)(vii). Moreover, the combination of Omura and Nakajima teaches such orthogonal codes (*see* FF 1-9) as we found above and as the Examiner found (Ans. 9-10, 13). For the reasons outlined above and as set forth by the Examiner, we also will sustain the obviousness rejection of dependent claim 31.

Independent Claims 34, 38 and 43

Appellant merely recites claim limitations of claim 34 and 43, including requirements that first through fourth unique codes identify each of the forward and reverse channels on one frequency channel, and generally asserts that there is no suggestion for such recited limitations and others. (App. Br. 14-15, 21). Appellant makes similar assertions regarding claim 38 (App. Br. 17). Such statements do not rise to the level of an argument explaining why the Examiner has erred, and fails to meet Appellant's burden on appeal. *See Kahn*, 441 F.3d at 985-86; 37 C.F.R. § 41.37(c)(1)(vii).

Moreover, the combination of Omura and Nakajima teaches two different codes for each forward and reverse channel, and different unique codes for each of the multiple communications channels, amounting to at least four unique codes, one for each forward and reverse channel on at least

two such communications channels, all on one frequency carrier or channel, as we generally found and explained above and as the Examiner found. (*See* FF 1-8, Ans. 4-7, 15, 18, 19). As such, the combination teaches at least the disputed first through fourth codes on one channel. Further, Nakajima alone discloses the four codes all on one channel. (FF 6-8).

For the reasons outlined above and as set forth by the Examiner, we also will sustain the obviousness rejection of independent claims 34, 38 and 43.

Dependent Claims 35 and 39

Appellant relies on arguments submitted for claims 34 and 38, and merely recites additional claim limitations of claims 35 and 39 including requirements that each unique plural code constitutes one of a plurality of mutually orthogonal codes, and generally asserts that there is no suggestion for such recited limitations and others. (App. Br. 15, 17-18). We have found no deficiencies in the Examiner's rejection of claims 34 and 38, and likewise find none regarding claims 35 and 39. We also have found that the combination teaches such a unique plurality of orthogonal codes, as we discussed *supra* regarding claims 30 and 31. (*See* Ans. 9-10, 15, 17-18; FF 1-8). We incorporate our discussions *supra* and the Examiner's findings here, and note that Appellant's further statements do not rise to the level of an argument explaining why the Examiner has erred, and fails to meet Appellant's burden on appeal. *See Kahn*, 441 F.3d at 985-86; 37 C.F.R. § 41.37(c)(1)(vii).

For the reasons outlined above and as set forth by the Examiner, we also will sustain the obviousness rejection of dependent claims 35 and 39.

Dependent Claims 32, 36 and 40

Appellant relies on arguments for claims 30, 34, and 38, and further merely recites claim limitations of claims 32, 36, and 38, including such additional recitations for a communication channel (claim 32), a base station (claims 32, 40), and a mobile terminal (claims 32, 36), and generally asserts that there is no suggestion for such recited limitations. (App. Br. 12, 15-16). Appellant's statements do not rise to the level of an argument explaining why the Examiner has erred, and fail to meet Appellant's burden on appeal. *See Kahn*, 441 F.3d at 985-86; 37 C.F.R. § 41.37(c)(1)(vii).

Moreover, we have found no deficiencies in the Examiner's rejection of claims 30 34 and 38, and find none regarding the rejection of claims 32, 36 and 40. (*See Ans.* 4-9, 13-16, and 18). We find that Omura and/or Nakajima teach such communications channels, mobile terminals and base stations (FF 1, 2, 4, 6, 8), as the Examiner also generally found. Further, Nakajima alone discloses the claimed communications channel, base station, and mobile terminal (FF 6, 8).

For the reasons outlined above and as set forth by the Examiner, we also will sustain the obviousness rejection of dependent claims 32, 36 and 40.

Dependent Claims 44-47

Appellant relies on arguments submitted for claims 30, 34, 38 and 43, and further, merely recites additional claim limitations of claims 44-47 requiring each unique code for the forward and reverse channels of the plurality of channels to be different, generally asserting that there is no suggestion for such recited limitations. (App. Br. 12-13, 15, 19, 22). We

have found no deficiencies in the Examiner's rejection of claims 30, 34, 38, and 43, and likewise find none regarding claims 44, 45, 46 and 47. We also have found that the combination of references teaches orthogonal codes for each of the forward and reverse channels of the plurality, as we discussed *supra* regarding claims 30, 31 and 35, and which we incorporate here. (*See* Ans. 9-10, 16-19, FF 1-8). We find that such orthogonal codes are different, or unique, by definition. (*See* Omura, col. 6, ll. 22-27, 43-47).

We also find that Appellant's further statements do not rise to the level of an argument explaining why the Examiner has erred, and fails to meet Appellant's burden on appeal. *See In re Kahn* at 985-86; 37 C.F.R. § 41.37(c)(1)(vii).

We alternatively find that Nakajima's codes are different and meet claims 44, 45, 46 and 47 (FF 7).

For the reasons outlined above and as set forth by the Examiner, we also will sustain the obviousness rejection of dependent claims 44-47.

CONCLUSION

We affirm the Examiner's decision rejecting claims 30-32, 34-36, 38-40 and 43-47.

Appeal 2008-3240
Application 09/189,793

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv)(2006).

AFFIRMED

KIS

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